Naming Species II

Sometimes, among the specimens that we're able to bring back, there are representatives of what we think are new species. Now, when we have specimens that we think are new species, obviously there's a lot of scientific work that has to be done so that we can actually corroborate that. This work involves looking at specimens in other museums, looking at our own specimens, going through the literature, seeing what we can expect to find in that particular region of the world. Have other people been there before? Have they described any species from that region? You have to do a very thorough study of the previous literature; you have to look at the previous material that's been collected from that region. And if you *still* think that you may have something different, then you can begin the process of describing it as a new species. And for fishes, that involves some very meticulous and detailed work: looking at the anatomy, counting all of the scales, counting the fins and the fin rays, the vertebrae, the structures of the mouth. All of the anatomical details that give us clues about the identify of this particular individual. Then a formal description has to be prepared, and that formal description is based on the material that we have in front of us at any given time.

For example, these specimens here, which you can see in this jar, are another---I at least think---new species from Madagascar. And there are six specimens in this jar. These specimens will become what's called the "type series." The type series are the fish---or whatever animal it is; in my case the fish---that the scientists had in front of them when they wrote the description of the new species. So for all time, these particular six individual specimens are extremely important, not just because they carry the name of the new species, but because this is the comparative material that any other scientist, or anyone else who's interested in these fish, would have to consult to see if what *they* think I was talking about is actually what I was talking about, in these six individuals.

So we describe these six individuals, or however many there may be in a type series, in tremendous detail. We have to take all sorts of measurements; we have to do statistical analyses in which we compare the characteristics of this new species with other related species. We have to illustrate the paper in various ways. We can have beautiful illustrations drawn. I have a paper in front of me here that you will have access to, so I won't go into too much detail about it. But you will see that we have photographs of the specimens when they were alive, and when they were recently preserved. We have an artist's rendering of what

the specimen looks like. We have maps to show exactly where the specimens were collected. We have notes about what other specimens, what other species were caught, what the region looked like, what the water was like. It's a very detailed, elaborate process to actually describe a new species. These specimens then receive a number, a catalogue number, and they're archived in the Museum collections. So for all time, these will be available to scientists all over the world, to borrow, to look at, to examine, and to compare. And in this way, we can slowly build an archive of the species alive on the planet today. Many people would ask how important is it to describe a new species: There are 25,000 species of fish; is one new one that important? It depends how you look at things. But one way we can look at it is, how can we ever understand the ecology of our planet, how can we ever understand evolution, if we don't know who the basic players are? And species---for evolutionary biologists---are the players in the game of life. So we really need to document how many species there are on the planet.